One thing that I work hard to do in my band room, and something Dave Albert told me several years ago, is to have the kids listen to great music.  John Ross mentioned this on his MPA tape.  I was like "I already do this", so I realized, I need to do more of it.  I try to find as many different examples of great playing to model for my kids.  In the mornings, music can be heard from my room in the areas of dci, chamber, orchestral, small ensembles, solo, wind band, jazz, etc.  I also spend time in class especially with my younger bands at the beginning of the year just listening to recordings.  The idea is that if they don't hear great tone, and great intonation, etc., all of this other stuff is great, however, the kids need a model by which to go by.  Like Matt (fv) said about singing.  Model what a great tone is.  Sometimes, we even listen to great choral works, or solo singing examples.  As the voice is the most perfect instrument, our instruments should be an extension of our voice.

And I agree with everything Matt said about the singing.  Band kids naturally are not confident in this area.  I never was.  I went to college without ever having to sing a phrase in band class, and aural skills class was a nightmare, that I had to work hard at to overcome.  We tried something today in our wind ensemble class, by singing thru the I recommend exercises at the beginning of the book.  Took us at least 1/2 hour, before the group really took it seriously, and produced a decent vocal sound.  When they played the same exercises on their instruments, WOW....so yes, sing more.

As a woodwind player, my clarinets are usually decent, saxophones get better, and finally this year, my flutes were really good.  I always struggle with brass (though have gotten better thanks to john and matt).  So my brass players listen to a lot of recordings of brass players.  My brass still don't sound as good as some of the sections in the area, but they get a lot better than they were when I got them.  With YouTube, and other media so available to them, we have to guide the kids to what they should be listening for, and help them identify what is good, and what is not so good, using those higher level thinking skills.

I also promote a lot of our live events in the area as well.  Having taught in parts of the state that this wasn't so readily available, the kids have it fairly easy.  There is always a concert of some sort going on.  Whether it's a peer concert at a neighboring school, the symphony, brass band, etc., the kids have the opportunity to hear great playing.  Sometimes with my freshman, I wonder if the concepts will ever come across, but by senior year, the ones that have bought in to the process, usually sound quite good.

I'm eager to try out some of these new things with the iPods, ipads...we have some at the school.  Gives me an excuse to try out this technology.  Finally starting using an Elmo...was really cool not to make a transparency anymore when teaching chord structures, and score analysis.

I second John Enloe's mention of doing mouthpiece (or mouthpiece and barrel) work with the woodwinds to improve pitch.  Attached is a PDF that shows the pitch produced on the "fundamental parts" of each instrument.  This was part of John Pasquale's clinic at Convention with the Cedar Ridge HS Band.  I know some folks I talked to weren't impressed with that clinic, but there were some pedagogical gems in there.

Side topic: Having your kids play passages on just the "fundamental parts" is very revealing about what's going on inside their mouths with tongue placement and movement.  Obviously it makes the brass more accurate, but it does a lot for the woodwinds, too.  At first, you'll hear lots of pitches changing when kids articulate - "daw-eee, daw-eee" kind of sounds.  Once they get the pitch to be still AND have clear articulation is makes a **huge** difference in pitch center and clarity.  When I heard that part of Pasquale's clinic I thought "Yeah…I don't know about that…" but then decided to try it.  It's a **great** technique to focus both articulation and pitch.  It also takes some time for kids to buy in because honking on the reed/mouthpiece combo sounds pretty obnoxious.  Come to think of it, I haven't done this in a while and will use it in rehearsal tomorrow.  Thanks, John! :-)

About once every nine weeks I have my principal player take each section member in the hall (or into your ensemble rehearsal room…for those of you with band rooms built in the last 20 years…) one at the time and tune their pitch on the mouthpiece against a tuner.  It takes a few sessions for the kids to get good at nailing it right off…and some of them never quite get it…but it shows the kids just how far out of whack some of their embouchures are.  It also reminds them there is a **reason** we harp on them about correct embouchure formation.  If the embouchure is jacked up it's darn near impossible to play with consistent and accurate pitch.

Ed List's sheet (From Alternative Rehearsal Techniques) on Balance, Blend, and Intonation is one of the best I've seen on all of these topics.  Matching a fundamental pitch, either from a machine, or by an instrument is one of the ways to teach kids these skills.  But I think the greatest thing, is to tune every day and make it a big idea.  Tone quality has to be getting close to what we want, but the idea that playing on pitch is just as important as playing in time is something that we all can work on. By  Playing just  the instruments fundamental parts: Head joint(Flute), Mouthpiece(Clar., Sax and lower brass), mouthpiece and leadpipe with trumpets, Reed(oboe-Bassoon), etc.  makes sure that they are having the correct pitch at the front end of the horn, and that should really help too!  This is one of the ideas, that at the High School level, I have to work on every fall.  Matt has some great new tech. with the apps.  Another is Tune UP!  They use to use this at NCSU when Frank Hammond was there.  CD with pitches and you played to those pitches unisons, and different intervals to match.  I hope this gives you some things to think/talk about.  Good luck with those end of the year concerts!  and graduation. John

I agree with everything Creighton said, especially about producing a quality tone and steady pitch.  Until those two things are consistent, chasing intonation is a waste of time except to remind the kids that it's a goal worth having.

I'm looking forward to hearing what folks do.  I'm going to spout off like I know what I'm doing and my kids play in tune all the time.  Neither of those is true, but here's what I Think I Know Today…

Short version: I think of teaching tuning as having four parts…pretty much in this order of importance:

**1) Consistent and accurate tone and pitch production**

This is a daily battle and long-term process.

**2) Developing an internal target pitch - audiate (hear it internally) the note before you play it**

Sing.  Sing.  Sing some more.  If they don't want to sing, have them hum until they feel comfortable singing with their mouth open.  Sing in unisons.  Once they get comfortable, sing simple harmony or even a familiar chorale.  Model good singing for them.  If they can sing something reasonably well, it shows they've internalized the pitch.  Work to develop "internal pitch" the same way we talk about developing "internal rhythm" for good time.

I have also come around to the idea of using a synthesized drone tone to help kids develop this internal pitch.  We use a metronome so we have a pulse reference.  I think of drone tones and pitch generators as a "metronome for pitch".  Read on for how I use the Tonal Energy app for this.

**3) Be able to hear and recognize out-of-tune quickly.  Do something about it (lipping, tuning slide, amount of reed, etc.)**

Ed Lisk's "beatless tuning" works well.  I've started using the A.P.S. Tuning Trainer app to help kids identify flat, sharp or same on back-to-back notes.  See more about this below.

Sometimes intonation problems stem from balance problems.  My phrase is "You can't tune to what you can't hear".  We've all had kids on opposite sides of the band who are way out of tune, but don't seem to realize it because of the other parts or the acoustics of the room.  As soon as you stop and let those kids hear each other, the light bulb almost always goes off.  If you encourage (or trick) the kids into listening carefully for balance, the intonation nearly always improves because they are **listening and adjusting**.

**4) Anticipating mechanical or harmonic intonation problems before you play**

We have to know and adjusting for generic and specific pitch tendencies of your instrument (6th partial is sharp, D on a saxophone is sharp, the Gb on my horn is really flat, etc.) and for specific chord members (lower the major 3rd, raise a minor 3rd, etc.)

The Robert Garafalo *Improving Intonation in Band and Orchestra Performance* is a good tool for teaching instrument tendencies.  There is a chart that shows the intonation tendencies for each instrument.  I have worksheets, study guides and Scantron-based tests for the intonation tendencies of every instrument and will be glad to share.  A couple of sample sheets that I've developed are attached.

There is a new book called "Tuning for Wind Instrument: A Roadmap to Successful Intonation".  It looks very cool for teaching the intonation tendencies of each instrument and partials.  Don't have it yet myself, but I was able to flip through it at Midwest and it looked pretty good.

<http://www.meredithmusic.com/tuning-for-wind-instruments-roadmap-to-successful-intonation>

John Ross worked my band a couple of years ago and recommended that the kids play short notes when you take your collective tuning pitch.  Don't hold long notes for 10-15 seconds at a time.  Use "dah…dah…<adjust>…daaaah…<adjust>…dah".  This forces them to:

1) Think carefully about how they start the note in terms of pitch.

2) **quickly** compare their note to others and make a decision (in, out, sharp, flat)

It encourages an attitude of "start the pitch as close to in tune as you can and fix discrepancies as fast as you can" which is what every excellent wind player does.

I've started working with two new tools this year.  These will also look good on your teacher evaluation as artifacts for "use of technology" :-)

**1) A.P.S. Tuning Trainer (iOS app) - $2**

<http://apsdevelopmentllc.com/2012/08/iphone-tuner-tuning-ipad-app/>

<https://itunes.apple.com/us/app/a.p.s.-tuning-trainer/id552848024?mt=8>

It's available for just a couple of bucks on the Apple App Store and works on any iOS device.  It plays two pre-recorded versions of the same pitch back to back, but the second note is either slightly sharp, slightly flat or the same as the first pitch.  You tap a button to select flat, sharp or same and it tells you if you're right.  It contains a ton of pre-recorded sounds of various instruments (a generic reed instrument sound, brass sound, piano, string instrument sound) that are recorded at slightly different pitch levels ranging from a 5-10 cents apart to as much as 30-40 cents apart.

You can choose the octave, instrument type, length of time each sound plays (1/2 to 2 seconds, I think) and the maximum pitch discrepancy in cents (5-10 cents, 10-20 cents, 20-30 cents, etc.).

You can do 10-15 "questions" in 3 minutes or less, so it doesn't take much class time.  I did it informally - just had the kids show thumb up for sharp, thumb down for flat and fist for same - and then formally as a quiz after about 10-12 informal sessions.  For the quiz I had the kids fill in a Scantron with A for sharp, B for flat and C for same.  Doing it on Scantron means quick grading and a quality assessment if you and/or your administration is into that sort of thing.

Over time using that Trainer helped many of my kids.  It's also cheap enough that a few of my kids have bought it to practice.  Band kids are the awesomest kind of dorks :-)

**2) Tonal Energy (iOS app) - $4**

<https://itunes.apple.com/us/app/tonalenergy-tuner/id497716362?mt=8>

If you don't have this, BUY IT NOW AND START USING IT.  The first function is a cool tuner visualization.  That's the left-hand screenshot on the website above.  The best part for improving tuning is the Tone Generator function.  It has some of the same tone production and intonation adjustment abilities as the Yamaha Harmony Director keyboard, but is about $1196 cheaper.  The starting point for the Tone Generator is the same as the "Pitch" button on your Dr. Beat, but it goes much further.

We use metronomes to help weaker players develop internal pulse and to give everyone a "rhythm referee" so we all agree on the pulse as a group.  I've come around to the idea that having a "pitch referee" is good.

• Pull up the Tone Generator

• Choose the Square Wave sound (very important - **use that sound**)

• Hit the "Sustain" button.  That button lights up a lovely yellow-cream color when it's active.

• Tap the "minus" button to the left of "octave" until the number next to it reads "2".

• Tap the letter name of the note you want to produce on the keys.  F is probably fine for most kids' voices, I guess.  You'll see the F button light up with some sort of solid color.

• Tap the "plus" button so the number reads 3.  Tap the F key again.  This gives you two octaves of F and a thicker sound.

• Tap the "plus" button and F for octaves 4 and 5.  Now you've got 5 octaves of F and a good thick timbre for every instrument or voice range in your room.

Have the kids sing a pitch (any one will do at this point) using a bright, open "A" syllable.  The combination of the square wave timbre and the "A" syllable makes the beats of out-of-tune-ness REALLY obvious to the singer.

Next steps are to sing Remington long tone patterns or the first 3-5 notes of a major scale using that home note as the tonic.  I model whatever pitch pattern we do first to try to demonstrate what it should sound like.  It's tough because that square wave really shows off being the least little bit out on an interval.  I like to have my kids sing solfege, but neutral syllables work just as well.  The key is demonstrate "This is what in-tune **really** sounds like".  I think sometimes we assume kids know what really good intonation sounds like, but they often don't.  They know "out of tune" or "beats" but don't have an internal sound target to aim for.  This exercise starts to build and reinforce that model day by day.

Have the kids play whatever they just sang.  Crank that square wave drone up nice and loud.  It's obnoxious, but important to have the pitch referee going as a constant reference.  Encourage them to keep their sound inside the volume of the drone.  They will probably want to play "out" of the drone and you'll have to lean on them.  You'll also have to train some on what that balance really is.  It also starts to train them to anticipate precisely what each harmonic interval should sound like as they move away and back from the tonic within each exercise.

Tonal Energy also allows you to play chords in just intonation - **this is sooooooo valuable and a a huge time-saver**.  To do this:

• Tap the Temperament button in the upper-left corner of the Tone Generator.  The text switches to "Just".

• Double-tap the button for whatever major key you want to work in.  If you want to be in Bb major, double-tap the Bb button.  The text should then read "Just - Bb".

• Tap the sustain button and then Bb in a octave 2.  Remember the plus and minus buttons to change octaves.

• "Plus" up to octave 3 and choose F and another Bb.

• "Plus" up to octave 4 and choose D.  You can put the D in whatever octave.  I just think it sounds clearer to the kids in octave 3 or 4.

You'll hear that the D is pulled down 13 cents to a "just" major third.  Hit the "Temperament" button and the 3rd will go back to an untempered third.  The difference is **really** obvious with the square wave, but the first few times I did this with the weaker players in my baby band I had to do this three or four times…back and forth…for the light bulb to go off for most everyone.